

What is claimed is:

1. A bioresorbable, self-expanding stent comprising:
a tubular-shaped member having first and second ends;
a walled surface disposed between said first and second ends;
said walled surface comprising a helical shape of woven monofilaments;
said monofilaments composed of a blend of at least two bioresorbable, bio-compatible polymers.
2. The stent of claim 1, wherein said blend of bioresorbable, bio-compatible polymers is selected from the group consisting of poly-L-lactide, poly-D,L-lactide and poly- ϵ -caprolactone.
3. The stent of claim 1, wherein said walled structure has approximately 30 monofilaments.
4. The polymer blend in claim 1, wherein said polymer blend possesses a tensile strength in the range of approximately 40,000 psi to 120,000 psi.
5. The polymer blend in claim 1, wherein said polymer blend possesses a tensile modulus in the range of approximately 400,000 psi and 2,000,000 psi.
6. The stent of claim 1, wherein said stent has a compressed first diameter of between approximately 6 mm to 10 mm and a second non-compressed diameter of between approximately 12 mm and 18 mm.
7. The stent of claim 1 wherein said woven monofilaments have a crossing angle of between approximately 100 degrees to 150 degrees in the non-compressed resting state.

8. A bioresorbable stent comprising:

a radially self-expanding tubular shaped member having first and second ends; a walled surface disposed between said first and second ends;

said walled surface comprising a plurality of substantially parallel pairs of monofilaments; said substantially parallel pairs of monofilaments woven in a helical shape such that substantially one-half of said substantially parallel pairs of monofilaments are wound clockwise in the longitudinal direction and one-half of said substantially parallel pairs of monofilaments are wound counterclockwise in the longitudinal direction such that an alternating, over-under plait of said substantially parallel pairs of monofilaments results; said monofilaments comprising of a blend of at least two bioresorbable, bio-compatible polymers.

9. The bioresorbable stent in claim 8 further comprising approximately twenty-four substantially parallel pairs of monofilaments.

10. The stent of claim 8, wherein said blend of bioresorbable, bio-compatible polymers is selected from the group consisting of poly-L-lactide, poly-D,L-lactide and poly- ϵ -caprolactone.

11. The polymer blend in claim 8, wherein said polymer blend possesses a tensile strength in the range of approximately 40,000 psi to 120,000 psi.

12. The polymer blend in claim 8, wherein said polymer blend possesses a tensile modulus in the range of approximately 400,000 psi and 2,000,000 psi.

13. The bioresorbable stent of claim 8, wherein said stent has a compressed first diameter of between approximately 6 mm to 10 mm and a second non-compressed diameter of between approximately 12 mm and 18 mm.

14. The bioresorbable stent of claim 8 wherein said woven monofilaments have a crossing angle of between approximately 100 degrees to 150 degrees in the non-compressed resting state.

15. A radially self-expanding bioresorbable stent comprising:
a blend of at least two bio-compatible, bioresorbable polymers formed into a substantially tubular shaped device;
said tubular shape device having a first and second ends;
a walled structure disposed between said first and second ends;
said walled structure having fenestrations therein.

16. The stent of claim 15, wherein said blend of bioresorbable, bio-compatible polymers is selected from the group consisting of poly-L-lactide, poly-D,L-lactide and poly- ϵ -caprolactone.

17. The polymer blend in claim 15, wherein said polymer blend possesses a tensile strength in the range of approximately 8,000 psi to 12,000 psi.

18. The polymer blend in claim 15, wherein said polymer blend possesses a tensile modulus in the range of approximately 400,000 psi and 800,000 psi.

19. The bioresorbable stent of claim 15, wherein said stent has a compressed first diameter of between approximately 6 mm to 10 mm and a second non-compressed diameter of between approximately 12 mm and 18 mm.

20. A method for producing a stent comprising:

- a) blending at least two bioresorbable, bio-compatible polymers in a predetermined ratio to form a blend;
- b) producing a monofilament from said blend by an extrusion process, said monofilament having a diameter between approximately 0.145 mm and 0.6 mm;
- c) extruding the monofilaments to a draw ratio of between approximately 3.5 to 5.5;
- d) braiding the monofilaments into a substantially helical weave forming a tubular-shaped device;
- e) annealing said tubular-shaped device at a temperature between the glass transition temperature and melting temperature of the blended polymers for between approximately five minutes and 18 hours.

21. The method of claim 20, wherein said blend of at least two polymers is a blend of two polymers.

22. The method of claim 21, wherein said polymers are poly-L-lactide and poly- ϵ -caprolactone.

23. The method of claim 20, wherein said predetermined ratio is in between approximately 80:10 to 99:1.

24. The method of claim 23, wherein said ratio is approximately 90:10.

25. The method of claim 20, wherein said diameter of said monofilament is between approximately 0.35 mm and 0.45 mm.

26. The method of claim 20, wherein said draw ratio is approximately 4.5.

27. The method of claim 20, wherein said annealing step further comprises heating the stent to 90°C for 1 hour followed by a second, uninterrupted heating cycle at 140°C for two hours under an inert atmosphere.

28. The method of claim 20, wherein said braiding step includes winding thirty monofilaments in a manner such that one-half of the monofilaments are wound clockwise and one-half are wound counter clockwise and wherein each clockwise monofilament intersects the counter-clockwise monofilaments in an alternating over-under pattern such that a tubular braid is made with crossing angles between overlapping monofilaments in the longitudinal or axial direction of 100-150 degrees when the stent is in a substantially non-compressed state.

29. The method of claim 20, wherein said braiding step includes winding twenty-four pairs of monofilaments in a manner such that one-half of the monofilament pairs are wound clockwise and one-half are wound counter clockwise such that each clockwise monofilament pair intersects sequential counter-clockwise monofilament pairs in an alternating over-under pattern such that a tubular braid is made with crossing angles between overlapping pairs of monofilaments in the longitudinal or axial direction of 100-150 degrees when the stent is in a substantially non-compressed state.

30. The method of claim 20, further comprising the step of adding a radio-opaque marker to said bioresorbable stent.

31. The method of claim 20 wherein said radio-opaque marker is composed of a member selected from the group consisting of barium sulfate and bismuth trioxide in a concentration of between approximately 5% and 30%.

32. A bioresorbable stent made in accordance with the methods of claim 31.

33. A method for producing a stent comprising:

- blending at least two bioresorbable, bio-compatible polymers in a predetermined ratio to form a blend;
- producing a tubular shaped fenestrated device having an outer, non-compressed diameter between approximately 12 mm and 18 mm;
- annealing said tubular-shaped device at a temperature between the glass transition temperature and melting temperature of the blended polymers for between approximately five minutes and 18 hours.

34. The method of claim 33, wherein said blend of at least two polymers is a blend of two polymers.

35. The method of claim 34, wherein said polymers are poly-L-lactide and poly-D-L-lactide.

36. The method of claim 33, wherein said predetermined ratio is between approximately 50:50 to 70:30.

37. The method of claim 36, wherein said ratio is approximately 60:40.

38. The method of producing the fenestrated stent of claim 33, wherein said fenestrated tube is made by either injection molding or extrusion.

39. The method of producing the fenestrated stent of claim 33, wherein said fenestrations are cut into said stent.

40. The method of producing the fenestrated stent of claim 39, wherein said cutting process is selected from the group consisting of laser cutting, machining and die cutting.

41. The method of producing the fenestrated stent of claim 40, wherein said fenestrations are molded into said stent.

42. The method of claim 40, wherein said annealing step further comprises heating the stent to 90°C for 1 hour followed by a second, uninterrupted heating cycle at 140°C for two hours under an inert atmosphere.

43. The method of claim 40, further comprising the step of adding a radio-opaque marker to said bioresorbable stent.

44. The method of claim 40 wherein said radio-opaque marker is composed of a member selected from the group consisting of barium sulfate and bismuth trioxide in a concentration of between approximately 5% and 30%.

45. A bioresorbable stent made in accordance with the methods of claim 44.